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DESCRIPTION
OF THE
CHEMICAL LABORATORIES
AT THE
OWENS COLLEGE,
MANCHESTER.
BY
H. E. ROSCOE, B.A., F.R.S.
FROM THE
PLANS OF ALFRED WATERHOUSE, A.R.A.



MANCHESTER:
J. E. CORNISH, BOOKSELLER TO THE OWENS COLLEGE,
33, PICCADILLY.

1878.

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DEPARTMENT OF

CHEMICAL LABORATORIES

JOHN F. COLLIER

MANCHESTER

H. E. KNOTT, B.Sc., F.R.S.

LIST OF OTHER WORKS BY A.A.A.

1918-19

1919-20

1920-21



MANCHESTER

J. L. COLLIER, B.Sc., F.R.S.

1918-19

1919

ppm

DESCRIPTION.

AS will be seen in the plans and elevations (Figs. 1 to 21), the chief features of the building are two large laboratories, each 70ft. long, 30ft. broad, and 29ft. high. No. 1 (Fig. 2) is devoted to the first year's or qualitative students, and in it there are sixty working places. No. 2 (Fig. 1) is arranged for the advanced or quantitative students, and contains ten blocks of four benches each, for the accommodation of forty students.

The first essential in a laboratory, that of good light, is provided for by large windows and skylights on both sides. The second essential, that of plenty of air and good ventilation, is secured by lofty rooms, each having a capacity of upwards of 50,000ft., and by means of the powerful draught of a high chimney at one end of the laboratory block; the upward current being maintained by means of a furnace in the basement at the foot of the chimney, which furnace in the winter works the hot-water heating apparatus, and in the summer simply serves for ventilating purposes.

The ventilation of the laboratory may be divided into two kinds, (a) the general ventilation, and (b) the special ventilation. (a) The general ventilation is effected by a wooden perforated ceiling running the whole length of both of the main laboratories, and conveying the vitiated air by a large air-trunk, shown in Fig. 5, to the shaft, within which rises the smoke flue of the furnace. The supply of fresh air is obtained from a high level by a fresh air shaft, down which the air passes, being drawn over the hot water pipes by the aspiration of the chimney, and passing into the laboratories through gratings placed in the walls. This ventilation acts so successfully, that when from fifty to sixty beginners are working in the qualitative (No. 1) laboratory, and forty advanced students are working in the quantitative (No. 2) laboratory, the air in both rooms is clear and pleasant throughout the day. In case, through negligence or accident, a large escape of acid fumes should occur, the windows, being hung on pivots, can all be opened, and a thorough renewal of the air can thus be effected in a few minutes. (b) The special ventilation is also worked by the main shaft, and is divided between the evaporating niches in the walls shown in plan, and in detail in Figs. 13 to 21, and the sulphuretted hydrogen closets marked R in the detailed drawing of each working table (see Figs. 6 to 12). Each of the niches is provided with an upright glazed earthenware pipe, 4in. in diameter, running into a horizontal pipe of the same material, 12in. in diameter, communicating directly with the main chimney, the draught in which is powerful enough to draw air from each one the niches without the necessity of any gas flame being used for aspiration, and no escape is noticed in the working of these when fumes, even of sulphuric acid, are evaporated in any quantity. In order to prevent the condensation of acid liquors, or of water, when these substances are boiled in the niches, a porcelain funnel is introduced into the lower part of the earthenware pipe inside the niche; all vapours generated under this funnel are immediately swept

into the chimney, and no condensation whatever takes place inside the glass windows of the niche. The amount of air which in actual practice is found to pass up these draught-places, is as follows :—

The large niches at the west end of the laboratory, aspirate 100 cubic feet of air per minute, and each of the smaller ones in the three walls running east and west, 12 cubic feet of air per minute.

The sulphuretted hydrogen closets in each working bench, shown in section in Fig. 11, and in plan in Figs. 7 and 9, are joined together in groups of two or four, and placed in connexion with a 7 in. or 4½ in. glazed earthenware pipe communicating with a horizontal flue shown in section in Fig. 5, running between the fireproof arching under the floor, and passing into the chimney. The down-draught in each of these closets is continuous and powerful, each closet in the laboratory No. 1 aspirating at the rate of 5 cubic feet per minute, whilst those in laboratory No. 2 aspirate on an average 20 cubic feet per minute, those at the furthest end of the laboratory differing but slightly from those situated nearest to the chimney.

The details of the arrangements of the working benches are seen in Figs. 6 to 12. The small block of buildings shown in section in Fig. 5, and in plan in Figs. 1, 2, and 3, consists of two floors, each containing seven rooms divided into, on the ground floor, 1, organic analysis room ; 2 and 3, balance rooms ; 4, gas analysis room ; 5, Demonstrator's room ; 6, Prof. Schorlemmer's lecture-room for Organic Chemistry ; 7, Prof. Schorlemmer's private room.

The basement floor shown in Fig. 1 contains—1, laboratory for medical and evening students, with accommodation for fifty workers, also ventilated by the main shaft ; 2, metallurgical laboratory containing furnaces, also in connexion with the large chimney ; 3, store room ; 4, class room ; 5, lavatory and cloak room ; 6, spectroscopic room ; 7, photographic room ; 8, dark room for photometry ; 9, boiler house ; and 10, three preparation rooms.

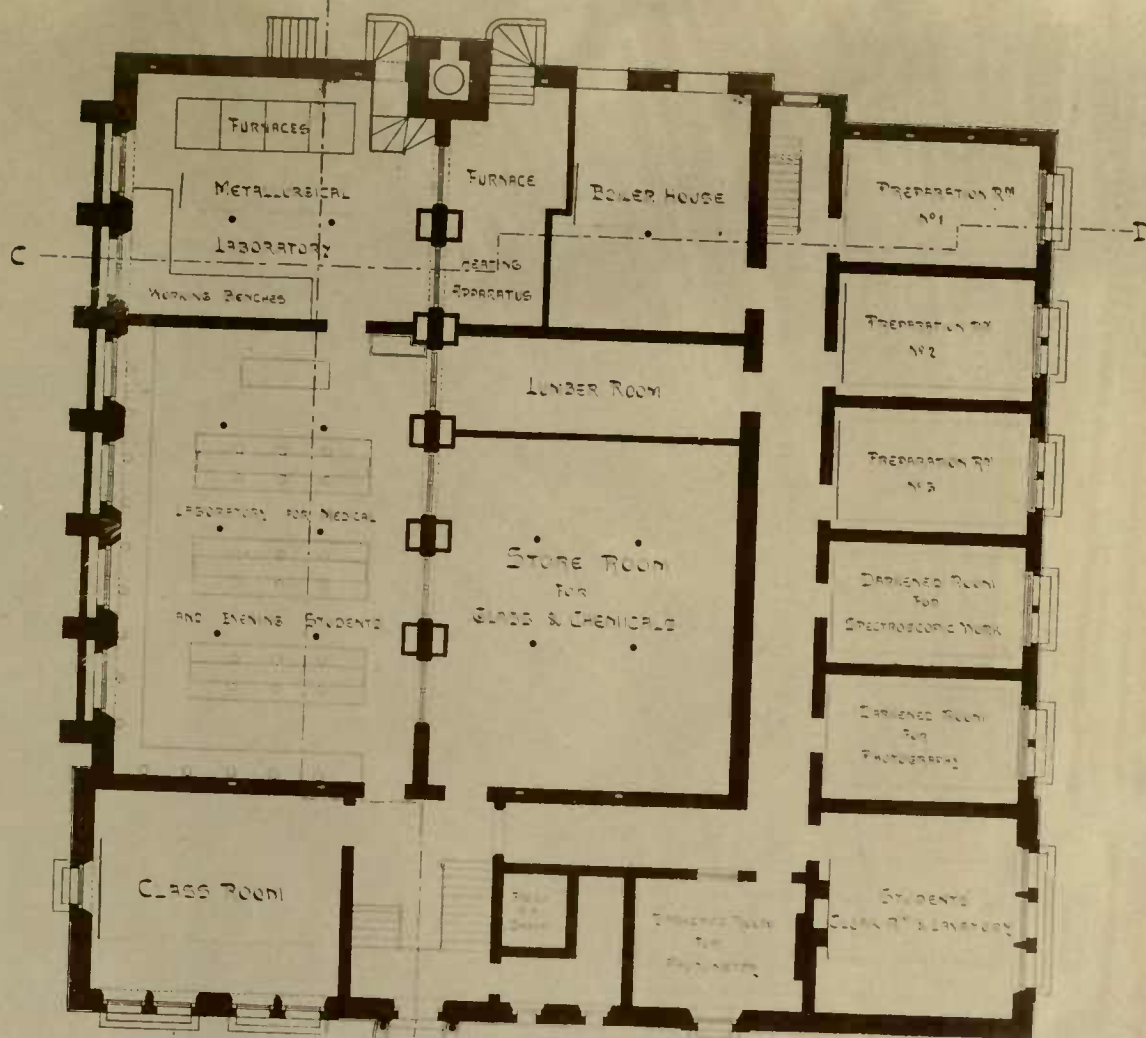
The first floor, Fig. 4, contains Professor Roscoe's private room, private balance room, and private laboratory with windows opening into laboratories Nos. 1 and 2.

It will be seen from the plans that the block of working laboratories communicates by a corridor with the large chemical lecture theatre (capable of seating an audience of 380), which has a small laboratory for the lecturer's immediate use behind his platform.

Sections of the laboratory block and of the lecture theatre are found in Figs. 4 and 5.

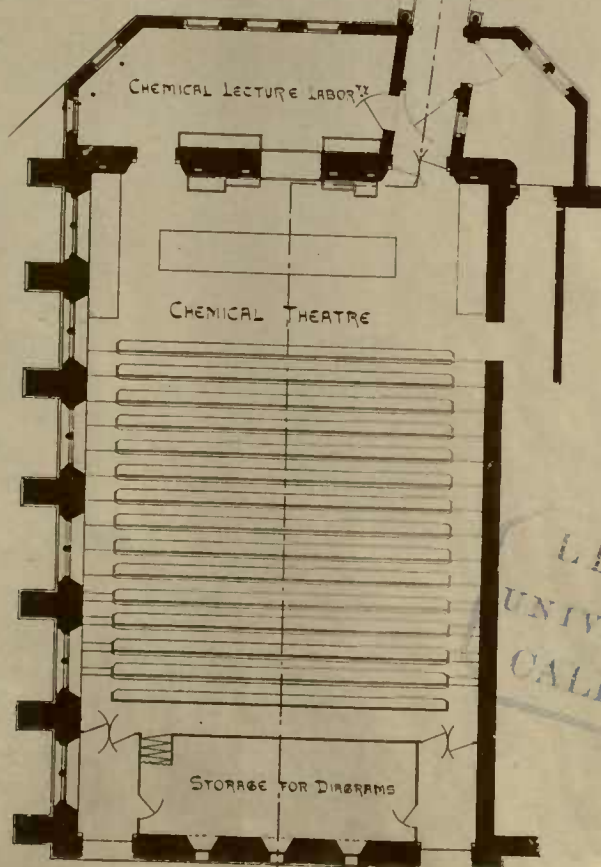
The whole of the buildings and fittings have been carried out from the designs of Mr. ALFRED WATERHOUSE, A.R.A.

H. E. ROSCOE.



BASEMENT PLAN

FIG. 1

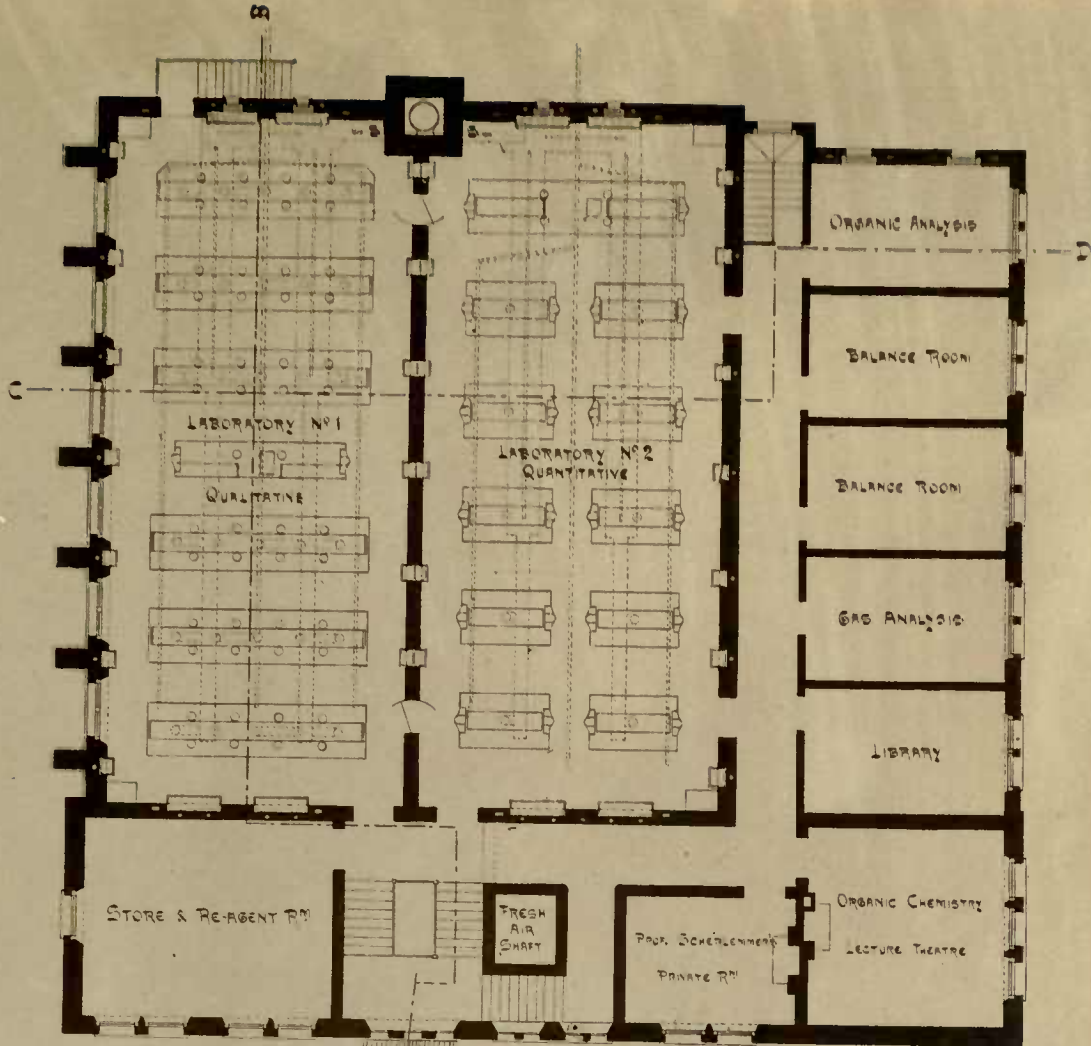


CHEMICAL LABORATORY

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GROUND FLOOR PLAN
FIG. 2



CHEMICAL LABORATORY
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CHEMICAL LABORATORY - OWENS COLLEGE - MANCHESTER

FIG. 4

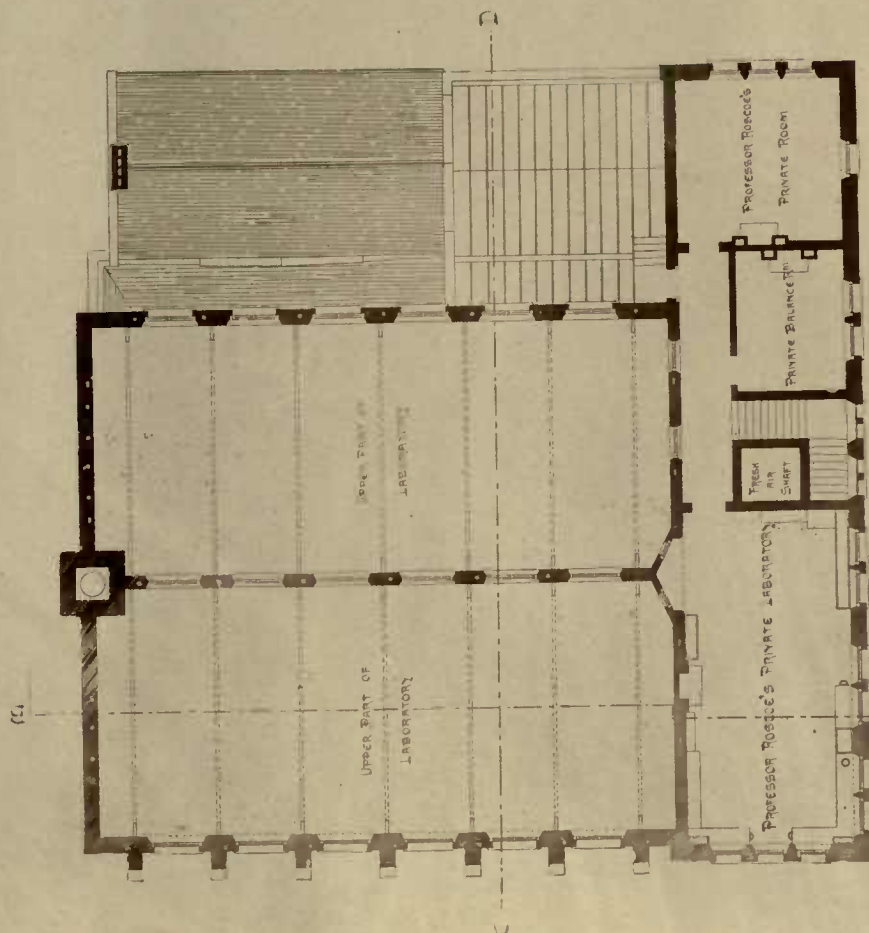


FIG. 3 FIRST FLOOR PLAN

FIG. 5

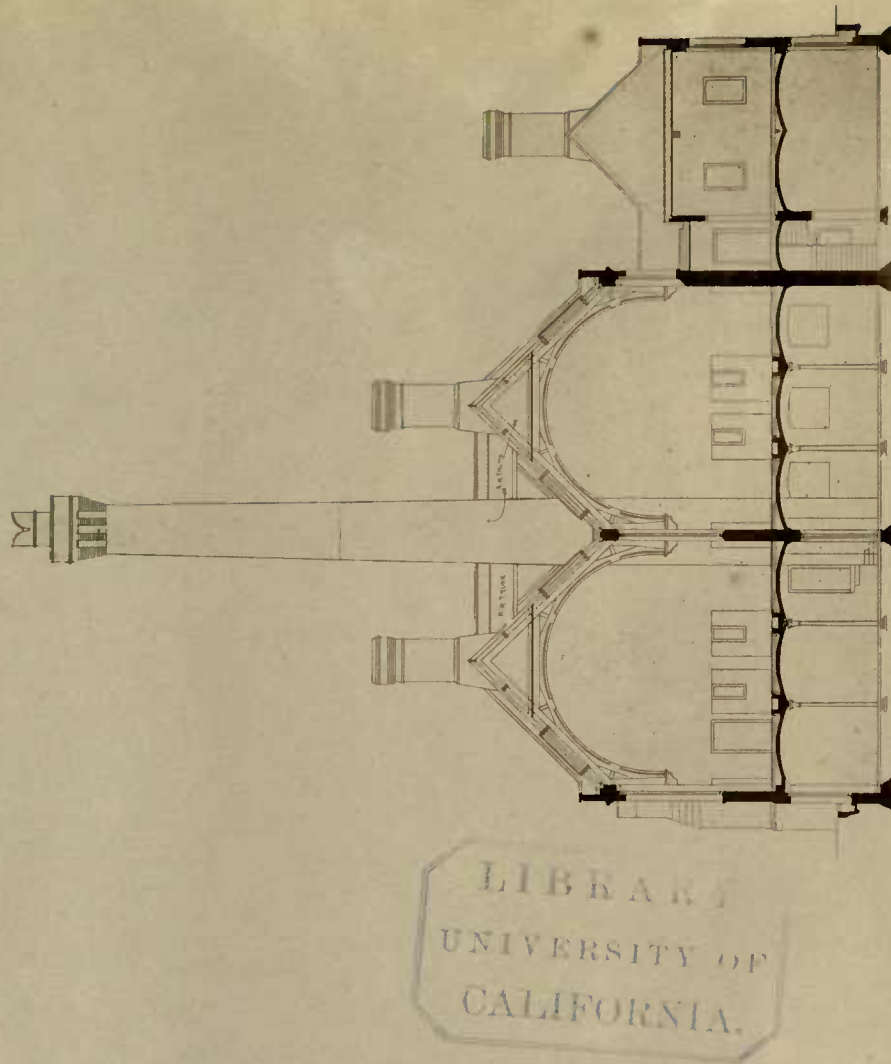


FIG. 5 SECTION ON LINE C-D

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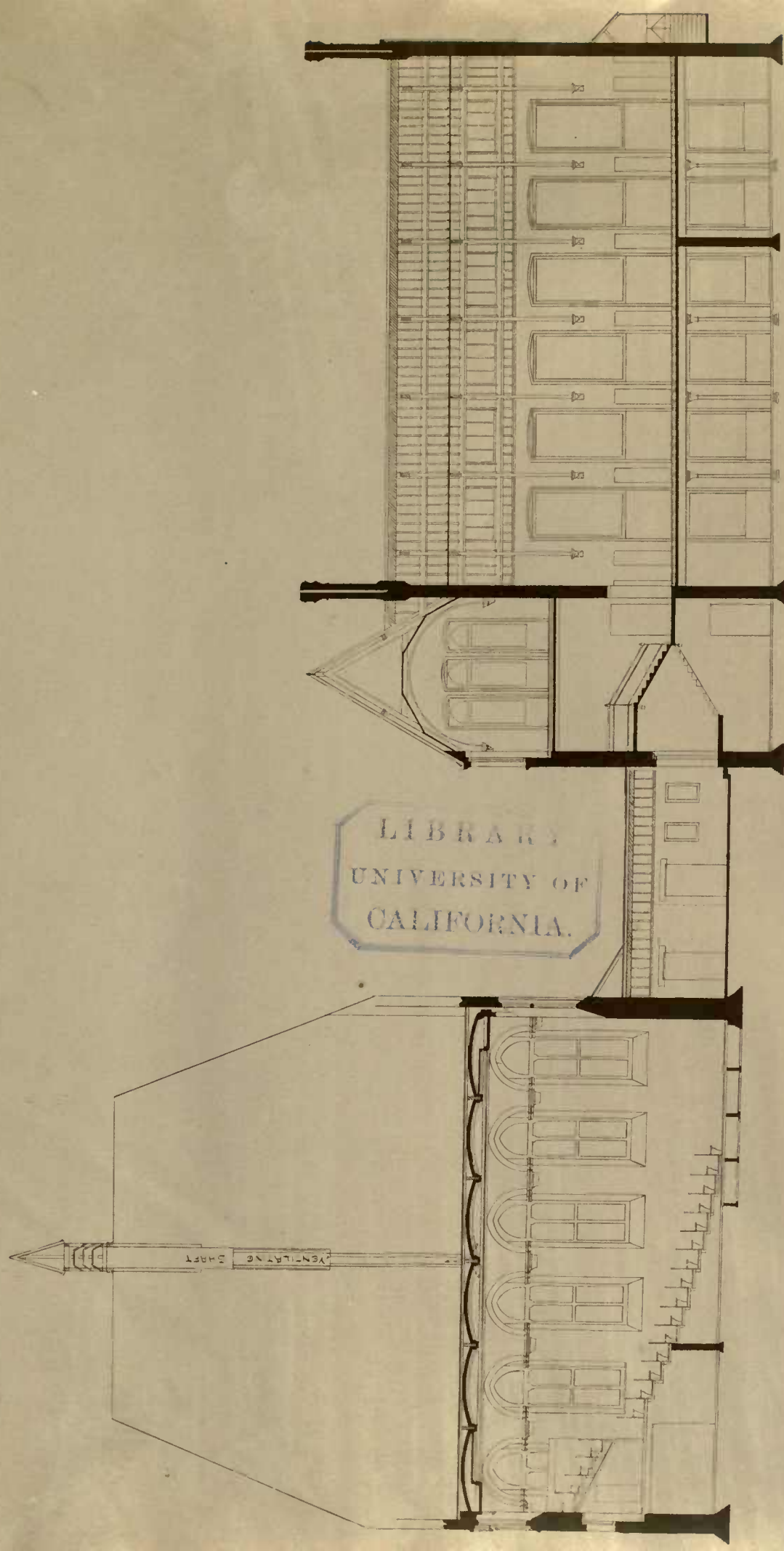
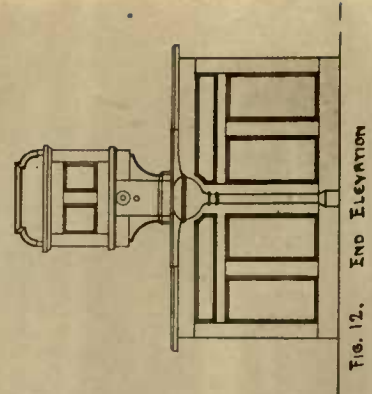
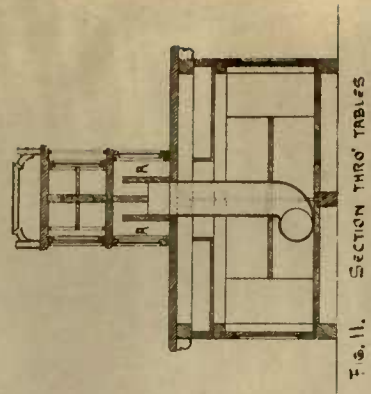
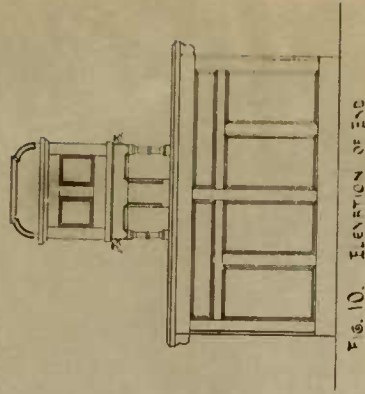
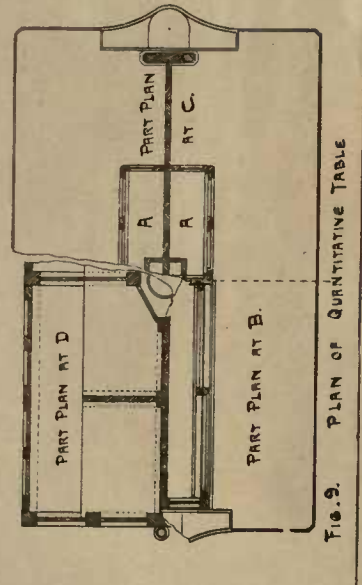
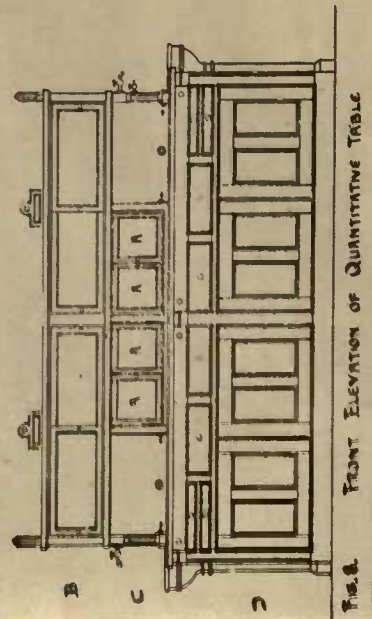
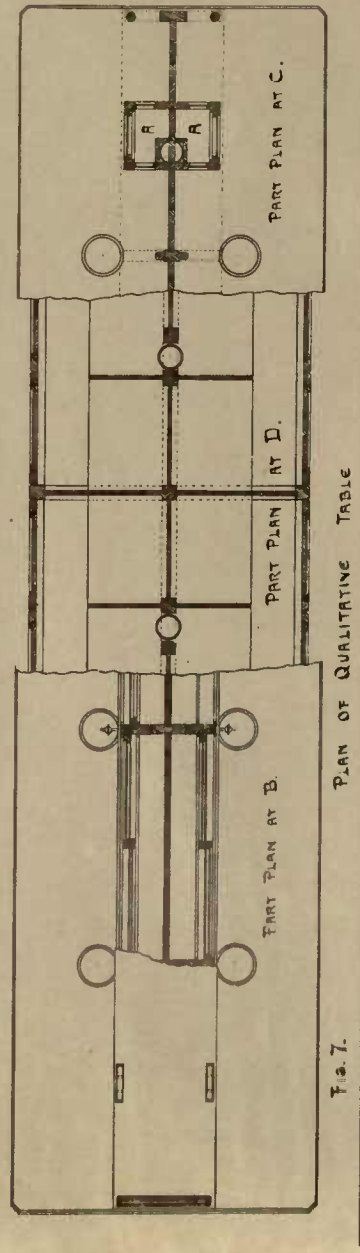
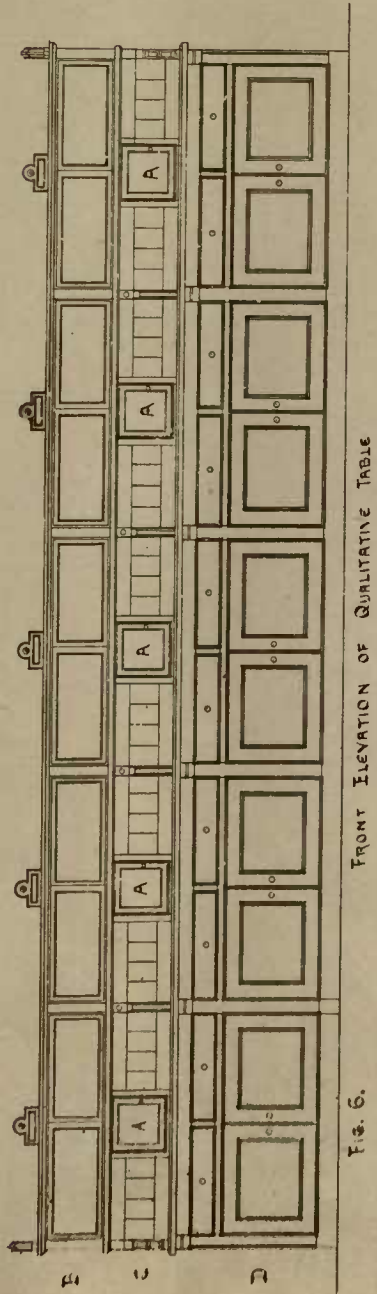


FIG. 4

SECTION ON LINE A.B.

Scale of Feet 0 1 2 3 4 5 6 7 8 9 10

CHEMICAL LABORATORY - OWENS COLLEGE MANCHESTER



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CHEMICAL LABORATORY - OWENS COLLEGE - MANCHESTER

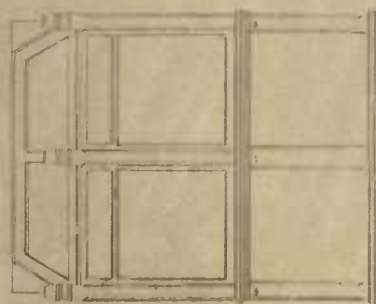


FIG. 13 SECTION

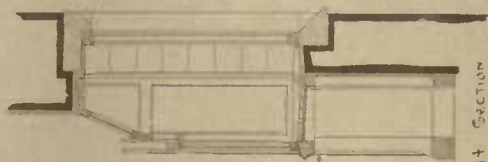


FIG. 14 SECTION



FIG. 15 ELEVATION



FIG. 16 SECTION



FIG. 17 SECTION



FIG. 18 PLAN OF DRAUGHT PLACE IN EAST WALL

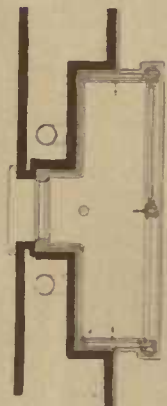


FIG. 19 PLAN OF DRAUGHT PLACE IN WEST WALL

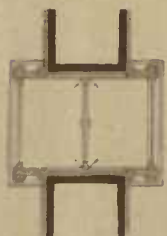


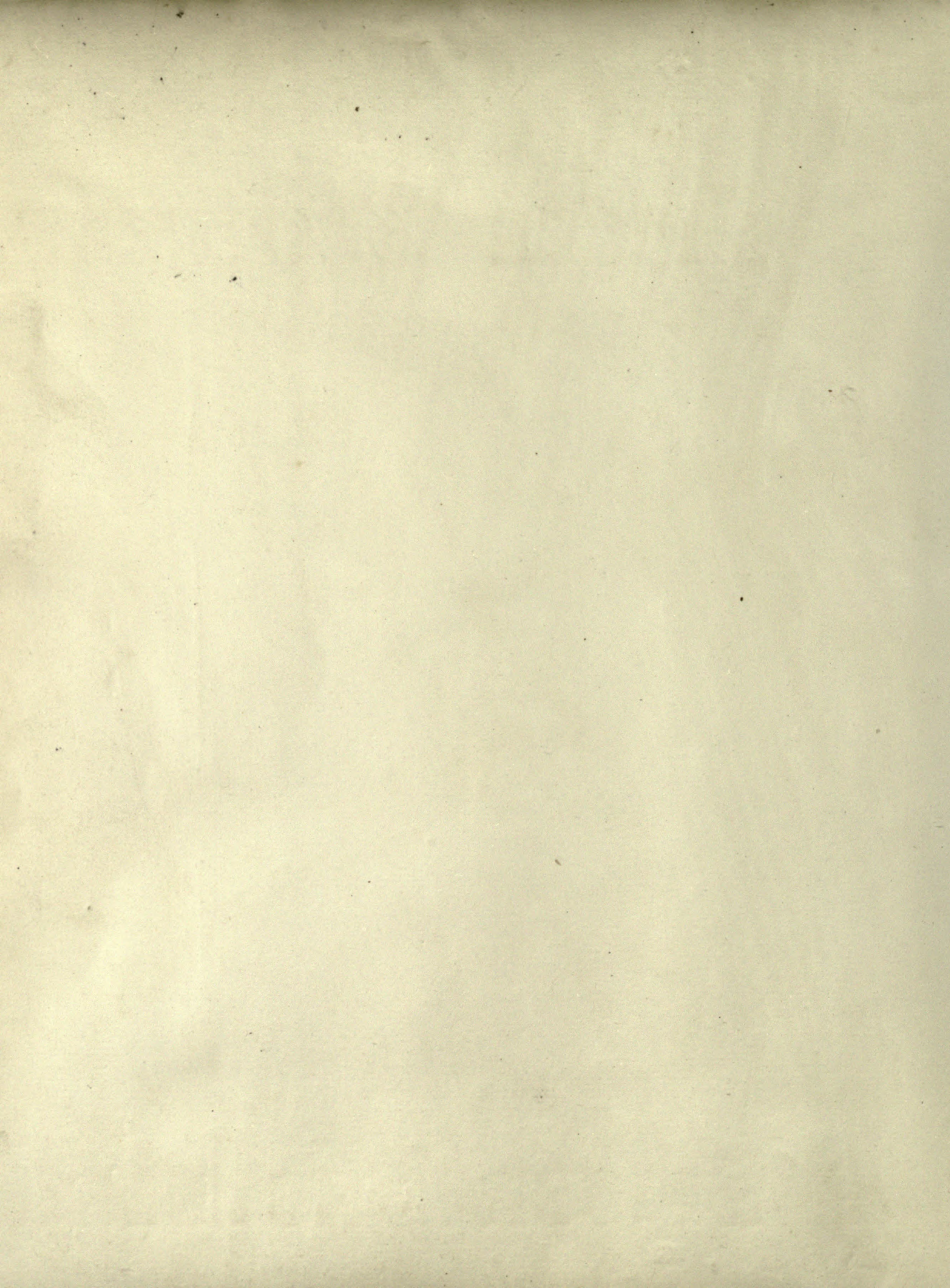
FIG. 20 PLAN OF DRAUGHT PLACE IN NORTH WALL



FIG. 21 PLAN OF DRAUGHT PLACE IN SOUTH WALL

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